

PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Improvements in and relating to Prismatic Systems suitable for Telescopes.

I, JOHN WILLIAM HASSELKUS, a British subject, of Optical Works, Clapham Common, London, S.W. 4, do hereby declare the nature of this invention to be as follows:—

The invention relates to prismatic systems suitable for telescopes.

In such systems light is lost at each glass-air surface and one object of the invention is to reduce the number of these surfaces as far as possible so as to increase the illuminating power.

Another object of the invention is to provide an improved method of assembling the individual prisms or other elements optically associated therewith so that they will maintain their correct relative positions.

With such objects:—

The present invention consists in a prismatic system suitable for telescopes, in which a pair of associated prisms are fused or welded together with or without the interposition of a cylindrical or other block.

The invention further consists in fusing or welding the plane surface of a lens to a prism or to another element similarly united to the prism.

In carrying the invention into effect according to one form as applied to the prismatic erecting system of a pair of binoculars, each prism consists as usual of a triangular block of glass having a plane base and two plane faces substantially at right angles to one another. After finishing the different faces, the bases of a pair of prisms are placed in optical contact in the correct cross-wise position in relation to one another and by the application of suitable heat and pressure the two prisms are united into an integral or solid block of glass.

By a proper control of the heat and pressure, this union can be effected without deformation of the finished optical surfaces of the prisms or production of internal strains.

According to a modified form of the invention, instead of placing the two prisms directly in contact with one another, a block of glass preferably of cylindrical form with optically-finished surfaces to contact with the prism bases is interposed before the application of heat and pressure as above to effect their union.

In accordance with a further part of the invention, which may be used in conjunction with either of the specific forms thereof above described, the plane surface of a plano-convex lens forming in effect part of the eyepiece may be similarly fused or welded to its relative prism, or alternatively, it may be fused or welded to a plane face of cylindrical or other block which is itself fused or welded to the base of the prism.

As a modification of this latter form of the invention, the lens surface may be formed on the end of the cylindrical or other block itself.

By such means four of the glass-air surfaces are eliminated and instead of losing some 40 per cent. of original light at the glass-air surfaces as in the usual arrangement of separated prisms, according to the present invention this loss is reduced to about 28 per cent.

The scope of the present invention is wide enough to include other arrangements of prisms or prisms and lenses in prismatic systems, in which an integral union is effected by welding.

Dated this 24th day of January, 1928.

MARKS & CLERK.

COMPLETE SPECIFICATION.

Improvements in and relating to Prismatic Systems suitable for Telescopes.

I, JOHN WILLIAM HASSELKUS, a British subject, of Optical Works, Clapham Common, London, S.W. 4, do hereby declare the nature of this invention and in

what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

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The invention relates to prismatic systems suitable for telescopes.

In such systems light is lost at each glass-air surface and one object of the invention is to reduce the number of these surfaces as far as possible so as to increase the illuminating power.

Another object of the invention is to provide an improved method of assembling the individual prisms or other elements optically associated therewith so that they will maintain their correct relative positions.

With such objects:—

The present invention consists in a prismatic system suitable for telescopes, in which a pair of associated prisms are fused or welded together with or without the interposition of a cylindrical or other block.

The invention further consists in fusing or welding the plane surface of a lens to a prism or to another element similarly united to the prism.

Referring to the accompanying diagrammatic drawings:—

Figure 1 shows a perspective view of two prisms attached directly to one another.

Figure 2 being a similar view of the same prisms with a cylindrical element disposed between them.

Figure 3 is a perspective view of one of the prisms detached and having attached thereto a plano-convex lens; while finally

Figure 4 is a perspective view of a prism with a cylindrical element and lens attached thereto.

Corresponding parts in the different figures are denoted by the same reference symbols.

In carrying the invention into effect according to one form as applied to the prismatic erecting system of a pair of binoculars, (see Figure 1) the prisms, A, B, each consist as usual of a triangular block of glass having a plane base, a^1 , b^1 , and two plane faces, a^2 , a^3 and b^2 , b^3 , substantially at right angles to one another. After finishing the different faces, the bases, a^1 , b^1 , of a pair of prisms are placed in optical contact in the correct cross-wise position in relation to one another as shown in Figure 1, and by the application of suitable heat and pressure the two prisms are united into an integral or solid block of glass.

By a proper control of the heat and pressure, this union can be effected without deformation of the finished optical surfaces of the prisms or production of internal strains.

According to a modified form of the invention. (see Figure 2) instead of placing the two prisms, A and B directly in con-

tact with one another, a block of glass, C, preferably of cylindrical form with optically-finished surfaces to contact with the prism bases is interposed before the application of heat and pressure as above to effect their union.

In accordance with a further part of the invention, (see Figure 3) which may be used in conjunction with either of the specific forms thereof above described, the plane surface of the plano-convex lens, D, forming in effect part of the eyepiece may be similarly fused or welded to its relative prism, or alternatively (see Figure 4) the lens, D, may be fused or welded to a plane face of a cylindrical or other block, E, which is itself fused or welded to the base of the prism.

As a modification of this latter form of the invention, the lens surface may be formed on the end of the cylindrical or other block itself.

By such means four of the glass-air surfaces are eliminated and instead of losing some 40 per cent. of original light at the glass-air surfaces as in the usual arrangement of separated prisms, according to the present invention this loss is reduced to about 28 per cent.

In addition, owing to the integral attachment of the prisms to one another and to other elements, if any, the setting of the optical system in its cell or other support is facilitated.

The scope of the present invention is wide enough to include other arrangements of prisms or prisms and lenses in prismatic systems, in which an integral union of the parts is effected by welding or fusing.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A prismatic system suitable for telescopes, in which a pair of associated prisms are fused or welded together with or without the interposition of a cylindrical or other block, substantially as and for the purpose described.

2. A prismatic system as claimed in Claim 1, in which the plane surface of a lens is fused or welded to a prism or to another element similarly attached to the prism, substantially as and for the purpose described.

3. A prismatic system as claimed in Claim 2, in which the lens is formed in one with said other element, substantially as and for the purpose described.

4. Prismatic systems substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 24th day of October, 1928.

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[This Drawing is a reproduction of the Original on a reduced scale.]

